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A REVISED ENVIRONMENTAL QUESTIONNAIRE FOR EXPLOSIVE ORDNANCE

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MATERIALS RESEARCH LABORATORY
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Abstract

A revised version of the environmental questionnaire used by the Australian Ordnance Council as an aid to determining the environment likely to be experienced by explosive ordnance stores has been prepared. The reasons for the revision are discussed, and the principles followed in the revised version are outlined. The revised questionnaire is included as an appendix.

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Contents

A Revised Environmental Questionnaire for Explosive Ordnance

1. Introduction

Weapons and stores in which explosives are used, collectively referred to as explosive ordnance, are required to be safe and suitable for their intended application, and to remain so throughout their service life. Implicit in this requirement is a need to establish that safety and suitability for service will not be adversely affected by the Defence environment.

The Australian Ordnance Council (AOC) is the organisation responsible for providing advice to the Australian Defence Force on safety and suitability for service of explosive ordnance stores, and before giving such advice it normally requires environmental and safety trials of the item under assessment. In order to design trials which are relevant to the environment likely to be experienced by the store, it is necessary to obtain information on these environments. To assist in obtaining this information in a systematic manner, the AOC provides an environmental questionnaire for completion by the appropriate service organisation. The completed questionnaire, supplemented by follow-up discussions and requests for further information if necessary, is used by the AOC in design of appropriate trials.

A complete revision of the environmental questionnaire currently in use has been undertaken so that it will better indicate the probable sequence of events in the life of the store from manufacture to target, and so that staff completing the questionnaire are able to respond in terms which do not require an understanding of specialized environmental terms and conditions. This report describes the philosophical approach taken for the revision, and attempts to explain why particular decisions were taken. Such knowledge will be valuable to service staff undertaking preparation of a questionnaire, and for the AOC in answering queries.

2. *Purpose of an Environmental Questionnaire*

During its service life covering production to target or disposal, which can extend for many years, an explosive ordnance store can experience a wide range of environments, and must be able to withstand these without unacceptable degradation of its safety or performance. Environments can be natural, such as heat, cold, moisture, solar radiation, salt spray, or induced, i.e. created or aggravated by human intervention, such as vibration, shock, electromagnetic radiation. The store can experience these environments in varying degrees of severity, for different periods of time, in different sequences, and both singly or in combination. The assessment, within a reasonable period of time, of the ability of an item of explosive ordnance to successfully withstand these environments requires use of tests which simulate the various environments, but which also provide a degree of acceleration of any deleterious effects.

Consideration of the variations in environment likely to be experienced by different types of explosive ordnance leads to the conclusion that application of a standard sequence of tests, to fixed levels of severity, would be both impractical and undesirable. On the one hand a trial which covered all possible environments for all types of explosive ordnance would be prohibitively expensive, and even more importantly, would be likely to result in the unnecessary rejection of otherwise acceptable designs. The alternative of applying a standard range of tests at a level of severity which would be experienced by all stores would result in under-testing in cases where a store must withstand an unusually severe environment. It is thus necessary to select environmental tests to suit as far as practicable the environments the store is expected to experience. This principle of "tailoring" tests is the approach taken by several western nations [1, 2, 3].

The environmental questionnaire is the major source of information for the trial designer for use in determining the expected sequence and severities of environments from manufacture to target, and in preparing an appropriate test program. However it is recognized that all aspects of the often complex sequence of environments cannot be fully covered by a medium such as a questionnaire, and it is important that the trial designer supplement the information by discussions with project staff, and by seeking further data as necessary.

3. *Problems with the Current Environmental Questionnaire*

Prior to the revision described in this report, the AOC had used an environmental questionnaire [4] based, without significant change, on that used by the UK Ordnance Board [5][1]. During use of completed questionnaires for preparation of environmental trial plans, the Explosives Environmental and Service Life Advisory Committee (EESLAC) of the AOC found that a considerable amount of the information needed to determine environmental profiles was not provided in the

[1] The UK Environmental Questionnaire has since been re-issued with extensive revisions.

responses, or was unclear or difficult to place in the context of the manufacture-to-target sequence of the store. It was felt that this was partly due to the design of the questionnaire. Particular aspects were:

Questions were not arranged in a logical manufacture-to-target sequence, which made both the completion of the questionnaire, and interpretation of the answers, more difficult.

Some stages of the manufacture-to-target sequence were not covered, or not clearly identified.

Separate questions were not provided for some activities which were likely to occur at more than one stage of the manufacture-to-target sequence, and under significantly different conditions at each stage. No provision was made for providing multiple responses needed to cover, for example, the different conditions of road transport at different stages, which are likely to involve different types of vehicle, different durations and different climatic regions. It was therefore likely that some stages could be overlooked, or that answers would be unclear.

Some questions sought information which was not likely to be available to the organisation completing the questionnaire, or which required the respondent to assess the level of stress caused by conditions under which the store is held or used.

Because of the wording of some questions, the required information was *often not given in the response.*

Comments from organisations required to complete the questionnaire reflected similar difficulties in understanding what was required by some questions, and in obtaining the required information. EESLAC therefore recommended that the environmental questionnaire be thoroughly revised.

4. *Environmental Questionnaire Design*

4.1 General Principles

In planning the revised environmental questionnaire, a number of general principles were followed; these are described below.

1. The environmental questionnaire should be set out in sections corresponding to identifiable stages of the manufacture-to-target sequence, so that:

(a) The organisation completing the environmental questionnaire can do so in a stage by stage sequence based on the expected deployment sequence of the store, and

(b) Staff preparing the environmental test plan can readily identify the sequence of environments experienced, and the applicable durations, and plan tests accordingly.

For example, the previous questionnaire [4], after questions about depot storage, unit storage, design and packing information, then asked one question about transport by wheeled or tracked vehicle in the "general" section, but made no provision for the possibility of several different types of land transport at different stages of the manufacture-to-target sequence. As a result it could be unclear to which stage of transport the response referred, or whether the possibility of transport occurring in more than one stage had been considered. The revised environmental questionnaire attempts to cover this by repeating a standardized set of questions at each applicable stage of the manufacture-to-target sequence. These questions are of the form:

"What is the maximum likely distance?
In what type of vehicle?
Through what geographic areas?
What is the estimated total time on vehicle:
    Running?
    Standing?"

Although this approach has made the questionnaire longer, and repetitive to some extent, each set of repeated questions is applicable to a different stage in the manufacture-to-target sequence. The repeated use of the same question structure should assist staff completing the questionnaire to consider the conditions affecting the store at each stage in a systematic manner.

2. Questions should be worded so that a specialized knowledge of environmental engineering would not be required to provide satisfactory answers. Staff completing the revised questionnaire are expected to describe the situation in which the store is held/used at each stage of the manufacture-to-target sequence, but not be required to make judgements about likely levels of environmental stress resulting from particular situations.

For example the previous questionnaire [4] sought information on the type of storehouses used in depot or unit storage, and then asked (Questions 2.12 and 2.14) "What are the temperature and humidity conditions likely to be experienced in depot (unit) storehouses?", information not usually available to the person completing the questionnaire. These questions have been re-worded so that in answering it is necessary only to make a choice of type of storehouse, and to state the geographic location. Judgements about conditions within the storehouse are to be left to the environmental trial designer.

A further example is that where a store may be held on an exposed launcher for considerable periods, the previous questionnaire asked (Question 3.11):

> "What are the temperature, humidity and other climatic conditions likely to be experienced on or in the launcher? Consideration should be given, for example, to solar radiation, wind, precipitation including salt mist and ice, and the proximity of other materiel. Give details."

In the revised questionnaire the corresponding section is:

> "In which geographic areas?
>
> Is the store exposed to (if not fully exposed, describe amount and nature of protection):
>
> a. Solar radiation?
> b. Wind?
> c. Precipitation (including ice)?
> d. Salt spray?
> e. Water immersion?"

4.2 Question Sequence

Both UK and US practice in design of test plans supports the approach of basing test sequences on the manufacture-to-target sequence.

The UK Ordnance Board in Proceeding 42242 [1] lists the major phases of the manufacture-to-target sequence as normally involving logistic transportation, storage, tactical transportation and handling, and recommends that trials be designed in an appropriate sequence to simulate the manufacture-to-target sequence. However, the AOC environmental questionnaire [4] is not set out in a way which allows this sequence to be readily identified.

MIL-STD-810D [2] requires that a "life cycle history of events and associated environmental conditions" be determined and for guidance provides a "generalized life cycle history", in which the main phases are shipping/transportation, storage/logistic supply, and mission/sortie use.

In order to facilitate arrangement of the environmental questionnaire into an order corresponding as far as possible to the manufacture-to-target sequence and at the same time minimize duplication of questions, the manufacture-to-target sequence has been regarded as being divided into two main phases, "storage" and "operational".

The "storage" phase commences immediately after manufacture. It includes storage by the manufacturer prior to delivery, transportation from manufacturer to depot, and storage by the user service at major depots. The term "storage" was chosen as it is descriptive of the major activity experienced by the store, although transportation between manufacturer and depots is included.

The "operational" phase commences when a store leaves a main depot or long term storage. It includes transport to operational bases or units, storage at these, and all subsequent stages of deployment to the target such as transport to forward locations and carriage on weapons platforms.

Although the division between "storage" and "operational" may be unclear in the case of some stores, it does correspond in the majority of cases to a significant change in conditions of storage and handling of the store. During the "storage" phase items are likely to be held in better quality buildings, with regular surveillance, and often for long periods. Land transportation is likely to be over surfaced roads and hence less severe than transport during later stages of the manufacture-to-target sequence. During the "operational" phase both climatic and mechanical environments are likely to be more severe, but of shorter duration. Stores may be held in unventilated enclosures, or unprotected, in extreme climatic conditions, and may be subjected to considerable mechanical stress, for example in transport over rough terrain or in tracked vehicles, and in handling.

Use of this division also permitted use of a single section of the environmental questionnaire, applicable to all stores, for the "storage" phase. Only for the "operational" phase, where conditions in each service are likely to be markedly different, has it been found necessary to have separate sections for each service.

5. *Environmental Questionnaire Description*

The revised environmental questionnaire is included as Appendix 1. It has been divided into six main sections, as follows.

SECTION 1: GENERAL INFORMATION - APPLICABLE TO ALL STORES

This section covers basic information about the design of the store and its packaging, intended applications, requirements such as watertightness, and required service life.

SECTION 2: LIFE CYCLE - "STORAGE" PHASE - APPLICABLE TO ALL STORES

Questions relating to storage in this section seek information on expected duration of storage, types of buildings and geographic locations, in order to allow the designer of the test plan to determine the likely extremes of temperature and humidity. As described above, a standard format of questions is used to cover the likely types of storage buildings. Judgements about the environmental conditions likely to exist within the storehouse are to be made by the designer of the test plan.

Transport from manufacturer to depot by road, rail, sea and air is covered, using a standard set of questions on distance, vehicle type, geographic areas and expected durations for each mode of transport.

SECTIONS 3 TO 5: LIFE CYCLE "OPERATIONAL" PHASE

Because of the significant differences in conditions of deployment of items of explosive ordnance by each of the services, a separate section dealing with the "operational" phase is provided for each. As far as possible, given these differences,

questions relating to storage, transport, handling and use follow a standard format for the reasons given above. Not all stages within each service environment will be applicable to all stores, but they are included for consideration, as significant differences in conditions are likely to exist between similar operations carried out at different stages. As in Section 2, questions have been phrased to allow, as far as possible, answers in terms familiar to the user service.

Section 3, Maritime Environment, covers, in logical sequence, transport from depot to ship, storage in supply or similar vessels, transfer to/from combat vessels, storage under various conditions in combat vessels and deployment on launchers, guns or other weapon systems. Questions on shipboard hazards and deployment of sea mines are also included.

Section 4, Land Service Environment, covers transport from depot to unit, storage by the operational unit, and field deployment. The latter includes carriage by vehicles, troops on foot, deployment on launchers, guns or other weapon systems, and temporary field storage.

Section 5, Air Service Environment, covers transport from depot to unit, storage by the operational unit, and deployment on operational aircraft.

SECTION 6: ABNORMAL HAZARDS/EVENTS - APPLICABLE TO ALL STORES

This section, applicable to all stores, covers abnormal events to which the store may be exposed at any stage of the manufacture-to-target sequence. To some extent this overlaps the requirements of testing for Classification for Transport and Storage, but it is felt that the environmental questionnaire is a convenient means of drawing the existence of particular hazards to the attention of the service user and the AOC, and thus to the appropriate committee.

6. Conclusion

A completely revised environmental questionnaire for determining the life cycle environmental profile of explosives ordnance has been prepared. It attempts to cover in logical order the sequence of events in the life of an item from manufacture to target, and seeks information from which the environmental conditions experienced by the item at each stage of this sequence can be derived.

The questionnaire in its present form is an extensive revision, and although comment was sought from likely users before it was issued, it is expected that shortcomings and areas capable of improvement will become apparent with use. Development of a document of this type is seen as an evolutionary process, with the views of both those who are required to complete it and those who use the data in the completed questionnaire being of importance. The author welcomes comments and suggestions for improvement, and hopes that by this process a more useful and hopefully simpler document will evolve.

The questionnaire, with some minor amendments, has been accepted by the Australian Ordnance Council [6] for use by Australian Defence Forces to determine the Life Cycle Environmental Profile of armament stores.

The questionnaire is reproduced as Appendix A to this report.

7. Acknowledgements

The assistance of members of EESLAC, who have contributed greatly to the development of the questionnaire with expert advice and comments, is gratefully acknowledged.

8. References

1. OB 42242, *Environmental testing of armament stores*, Ordnance Board, UK Ministry of Defence, 1983.

2. MIL-STD 810D, *Environmental test methods and engineering guidelines*, US Department of Defense, 1983.

3. Defence Standard FSD 0102, *Environmental testing of ammunition*, Defence Materiel Administration (Sweden), 1988.

4. *Environmental profile. Australian Ordnance Council questionnaire to formulate the environment of a store from manufacture to target*, Australian Ordnance Council, 1989.

5. UK Ordnance Board Form 41, 1983.

6. *Environmental questionnaire for armament stores*, Australian Ordnance Council Proceeding 194.91, August 1991.

Appendix A

Australian Ordnance Council Environmental Questionnaire

Australian Ordnance Council

Environmental Questionnaire

Introduction

1. This questionnaire is designed to establish the Life-Cycle Environmental Profile (LCEP) that a store (defined in the Australian Ordnance Council (AOC) terms of reference DI(G) ADMIN 02-1) is expected to experience during its life from manufacture to target, and is used by the AOC to devise trials to simulate those environments. The purpose of testing is to assess the probable response of the store and its container to natural and induced environmental conditions representative of those likely to be found in service.

2. The questionnaire is divided into six sections. Sections 1, 2 and 6 are required to be completed for all stores. Sections 3 to 5 are to be completed as applicable for the relevant user services.

SECTION 1	Describes the store, its packaging, and the users' requirements for service life.
SECTION 2	Covers what is broadly described as the "storage" phase of the store's life. This phase will typically include all occurrences and environments up to and including depot storage.
SECTIONS 3-5	These address particular requirements for stores subjected to the maritime, land and air service environments respectively in what is regarded as the "operational" phase.
SECTION 6	Covers those hostile environments and events which are not part of the normal manufacture to target sequence, but which will influence the safety assessment.

Annex A provides explanatory notes and definitions.

3. The completed questionnaire, or relevant sections of it, may be reproduced as an annex to the appropriate AOC Proceeding(s).

4. The safety and/or suitability for service of a store is greatly influenced by the natural or induced environment which it experiences in service use. Because of the fundamental importance of this form in the AOC assessment process, the answers must be accurate and the source traceable. Where an answer cannot yet be given, or where the question is not applicable, this should be indicated. Any subsequent change in the information recorded should be notified in writing to the AOC.

5. For stores which will be used by more than one service the respective sections are to be endorsed by the appropriate service authorities.

SECURITY CLASSIFICATION .....

AUSTRALIAN ORDNANCE COUNCIL ENVIRONMENTAL QUESTIONNAIRE

TO DETERMINE THE LIFE-CYCLE ENVIRONMENTAL PROFILE OF ARMAMENT STORES

STORE NOMENCLATURE .....

AOC TASK NO: .....

CERTIFICATION BY SERVICE AUTHORITIES

The information in this questionnaire represents the expected service environment and is consistent with the approved storage and operational requirements and design specifications for this store.

Signature	Signature .....
Name/Rank	Name/Rank .....
Appointment	Appointment .....
Date	Date .....
Operational Requirements Authority	Design Approval Authority OR Project Manager

Note: **Certification should be at Director level.**

SECURITY CLASSIFICATION .....

ENVIRONMENTAL QUESTIONNAIRE

SECTION 1: GENERAL INFORMATION - APPLICABLE TO ALL STORES

No.	Question	Answer	Source Reference
1.1	**DESCRIPTION OF STORE AND ITS USE**		
1.1.1	Store nomenclature or description:		
1.1.2	Are "sealed" drawings available? If so give drawing numbers.		
1.1.3	Are prototype development drawings available? If so, give drawing numbers.		
1.1.4	Which of the Services are likely to use this store?		
1.1.5	Does the store have detachable components? If so:		
	1.1.5.1 Are these at any stage to be stored/deployed in environments different from that of the main part of the store? If so, the parts of this questionnaire covering stages where the components are separated must be answered separately for each component.		
	1.1.5.2 At what stage of the store life cycle will they be assembled to constitute the complete store?		
1.1.6	Is the store required to be water tight? If so, to what immersion depth?		
1.1.7	Is the store required to be hermetically sealed (i.e. vapour tight)?		
1.1.8	Are desiccants included in the store? If so:		
	1.1.8.1 What life is required of the desiccant?		
	1.1.8.2 During which phases of the store life is desiccant required (e.g. depot storage, transport, etc)?		
	1.1.8.3 Is routine replenishment of desiccant intended?		

No.	Question	Answer	Source Reference
1.1.9	Is the store required to withstand changes in pressure due to changes in altitude?		
1.1.10	Is there a practice or blank version?		
	1.1.10.1 If so, is it at any stage to be stored/deployed in environments different from that of the operational version? If so, the applicable parts of this questionnaire must be answered separately for each version.		
1.1.11	Are range safety templates:		
	1.1.11.1 Available?		
	1.1.11.2 Required?		
1.1.12	Is the use of a land based Service firing range contemplated? If so, which ranges will be used for:		
	1.1.12.1 The operational version?		
	1.1.12.2 The practive version if any?		
1.1.13	Is the UN Classification of this store known? If so, what is it?		
1.1.14	Is a UN Classification required? If yes, a completed application for UN classification (TGI 39) should be returned with this questionnaire.		
1.1.15	In which countries is the store manufactured? If manufactured overseas, include overseas storage and transport to Australia in answers to Section 2.		
1.1.16	Is the store used by any other country? If so, which? (Provide any available environmental or safety data from overseas sources.)		

No.	Question	Answer	Source Reference
1.2	**PRIMARY PACKAGING (See Annex A Note 1)**		
1.2.1	Is the store and/or components to be packaged at any time during its life cycle? If so, describe the packaging, with reference to relevant drawings etc, and indicate throughout Sections 2 to 5 of the questionnaire whether the store is unpackaged or packaged at each stage of its life cycle.		
1.2.2	If primary packaging is used, is it to contain:		
	1.2.2.1 The entire store?		
	1.2.2.2 Individual sections of the store?		
	1.2.2.3 Components of the store?		
1.2.3	If primary packaging is used, is it intended for:		
	1.2.3.1 Storage only?		
	1.2.3.2 Transit only?		
	1.2.3.3 Storage and transit?		
	1.2.3.4 As a launcher tube or box?		
	1.2.3.5 As a multipurpose container (including 1.2.3.4 above)?		
	1.2.3.6 Reuse or disposal after the store has been used?		
	1.2.3.7 Any other role?		
1.2.4	Is the packaging required to be water-tight. If so, to what immersion depth?		
1.2.5	Is the packaging required to be hermetically sealed (i.e. vapour tight)?		

No.	Question	Answer	Source Reference
1.2.6	Are desiccants included in the packaging? If so: 1.2.6.1 What life is required of the desiccant? 1.2.6.2 During which phases of the store life is desiccant required (e.g. depot storage, transport, etc)? 1.2.6.3 Is routine replenishment of desiccant intended?		
1.2.7	Is the packaging required to withstand changes in pressure due to changes in altitude?		
1.3	**SECONDARY PACKAGING (See Annex A Note 2)**		
1.3.1	Is the packaged store to be handled/stored in larger units (e.g. pallets)? If so, describe the units, with reference to relevant drawings, etc and indicate throughout Sections 2 to 5 of the questionnaire when the store is packaged in this secondary packaging.		
1.4	**SERVICE LIFE AND ENVIRONMENT**		
1.4.1	What is the minimum required life of the store (see Annex A Notes 3 and 5) in: 1.4.1.1 Storage? 1.4.1.2 Operation?		
1.4.2	Does the store contain any known short life items? If so list them and state their lives, if known.		
1.4.3	Is it permitted to achieve the minimum required life by replacement of items/components? If so, which components?		
1.4.4	Is it intended to extend the life by using additional protection either to the package or to the store itself?		

No.	Question	Answer	Source Reference
1.4.5	At what stages in the life of the store will it be necessary to know whether its life can be extended?		
1.4.6	Is the store required to survive prolonged exposure to elevated temperatures such as a round of ammunition held in a hot gun chamber or a fire extinguisher cartridge close to power plants in aircraft? If so give details.		
1.4.7	Should the effects of fungal growth on the store be considered?		
1.4.8	What is to be done with stores/explosive components which become over-age:		
	1.4.8.1 Use in training?		
	1.4.8.2 Demilitarisation? If so, how?		
	1.4.8.3 Disposal? If so, how?		

SECTION 2: LIFE CYCLE - "STORAGE" PHASE - APPLICABLE TO ALL STORES

No.	Question	Package State (Note 4)	Answer	Source Reference
2.1	**STORAGE BY MANUFACTURER**			
2.1.1	Is it permissible for the manufacturer to hold the store in stock prior to delivery to the user service? (See Annex A Note 5.)			
2.1.2	For how long may the store be held by the manufacturer prior to delivery?			
2.1.3	Under which of the following conditions will the store be stored by the manufacturer (see Annex A Note 6):			
	2.1.3.1 Air-conditioned (with temperature and humidity control)? Storehouse temperature and humidity? Duration?			
	2.1.3.2 Temperature controlled only? Which geographic areas (e.g. city, state, etc)? Storehouse temperature? Duration in each?			
	2.1.3.3 Good quality storehouse (see Annex A Note 7)? Which geographic areas (e.g. city, state, etc)? Duration in each?			
	2.1.3.4 Thin walled storehouse (see Annex A Note 8)? Does it have adequate ventilation? Which geographic areas (e.g. city, state, etc)? Duration in each?			

No.	Question	Package State (Note 4)	Answer	Source Reference
2.2	**TRANSPORT, MANUFACTURE TO DEPOT**			
2.2.1	Will the store be transported over sealed roads? If so:			
	2.2.1.1 What is the maximum likely distance?			
	2.2.1.2 In what type of vehicle?			
	2.2.1.3 Through what geographic areas?			
	2.2.1.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			
2.2.2	Will the store be transported over unsealed roads? If so:			
	2.2.2.1 What is the maximum likely distance?			
	2.2.2.2 In what type of vehicle?			
	2.2.2.3 Through what geographic areas?			
	2.2.2.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			

No.	Question	Package State (Note 4)	Answer	Source Reference
2.2.3	Will the store be transported by rail? If so:			
	2.2.3.1 What is the maximum likely distance?			
	2.2.3.2 Through what geographic areas?			
	2.3.3.3 What is the estimated total time on rolling stock: a. Running? b. Standing?			
2.2.4	Will the store be transported by sea? If so:			
	2.2.4.1 What is the maximum likely duration?			
	2.2.4.2 Will it be as: a. Stowed cargo? b. Deck cargo? c. If deck cargo the type of protection provided, additional to that described in Section 1 above, if any (e.g. ISO container)?			
	2.2.4.3 Through what geographic areas?			

No.	Question	Package State (Note 4)	Answer	Source Reference
2.2.5	Will the store be transported by aircraft? If so: 2.2.5.1 What type? 2.2.5.2 At what maximum altitude for: a. Unpressurised aircraft? b. Pressurised aircraft? 2.2.5.3 What is the maximum duration?			
2.3	**STORAGE, DEPOT**			
2.3.1	Under which of the following conditions will the store be held in main depot storage? 2.3.1.1 Air-conditioned (with temperature and humidity control)? Storehouse temperature and humidity? Duration? 2.3.1.2 Temperature controlled only? Which geographic areas (e.g. city, state, etc)? Storehouse temperature? Duration of each? 2.3.1.3 Good quality storehouse (see Annex A Note 7)? Which geographic areas (e.g. city, state, etc)? Duration in each? 2.3.1.4 Thin walled storehouse (see Annex A Note 8)? Does it have adequate ventilation? Which geographic areas (e.g. city, state, etc)? Duration in each?			

SECTION 3: LIFE CYCLE - "OPERATIONAL" PHASE - MARITIME ENVIRONMENT

No.	Question	Package State (Note 4)	Answer	Source Reference
3.1	**TRANSPORT, DEPOT TO SHIP**			
3.1.1	Will the store be transported over sealed roads? If so (see Annex A Note 6):			
	3.1.1.1 What is the maximum likely distance?			
	3.1.1.2 In what type of vehicle?			
	3.1.1.3 Through what geographic areas?			
	3.1.1.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			
3.1.2	Will the store be transported over unsealed roads: If so:			
	3.1.2.1 What is the maximum likely distance?			
	3.1.2.2 In what type of vehicle?			
	3.1.2.3 Through what geographic areas?			
	3.1.2.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			

No.	Question	Package State (Note 4)	Answer	Source Reference
3.1.3	Will the store be transported by rail? If so:			
	3.1.3.1 What is the maximum likely distance?			
	3.1.2.3 Through what geographic areas?			
	3.1.2.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			
3.1.4	Will the store be transported by aircraft? If so:			
	3.1.4.1 What type?			
	3.1.4.2 At what maximum altitude for:			
	a. Unpressurised aircraft? b. Pressurised aircraft?			
	3.1.4.3 What is the maximum duration?			
3.1.5	Will the store be transported from depot to ship by any other means (e.g. lighter)? If so, give details.			
3.1.6	What is the maximum height that the store will be lifted above the wharf/bottom of vessel during loading/unloading (from lighter or wharf)?			
3.1.7	Is the store likely to be returned to depot and subsequently re-issued? If so, how many times is this likely to occur?			

No.	Question	Package State (Note 4)	Answer	Source Reference
3.2	**STORAGE IN SUPPLY VESSELS, TROOP CARRYING SHIPS OR LANDING SHIPS OR CRAFT**			
3.2.1	Under which of the following conditions will the store be stowed during peace time exercises and operational conditions? 3.2.1.1 Air-conditioned magazine? a. Duration? b. Magazine temperature and humidity? 3.2.1.2 Forced draft ventilation only? a. Which geographic areas? b. Duration in each? c. Expected temperature and humidity range in each? 3.2.1.3 Deck cargo? a. Which geographic areas? b. Duration in each? c. Type of protection provided, additional to that described in Section 1 above, if any (e.g. ISO Container)? 3.2.1.4 Other storage? Give details.			

No.	Question	Package State (Note 4)	Answer	Source Reference
3.3	**TRANSFER TO/FROM COMBAT VESSEL**			
3.3.1	Will the store be transferred between the vessels at sea by jackstay?			
3.3.2	Will the store be delivered by helicopter? If so:			
	3.3.2.1 As an internal load or underslung?			
	3.3.2.2 Will it experience the shock and vibration effects of gunfire?			
	3.3.2.3 What will be the maximum flight duration?			
3.3.3	On what types of combat vessel will the store be deployed? (Complete Sections 3.4, 3.5 and 3.6 for each vessel type.)			
3.4	**STORAGE IN COMBAT VESSEL**			
3.4.1	Under which of the following conditions will the store be stowed during peacetime exercises and operational conditions?			
	3.4.1.1 Air-conditioned magazine?			
	a. Duration? b. Magazine temperature and humidity?			
	3.4.1.2 Forced draft ventilation only?			
	a. Which geographic areas? b. Duration in each? c. Expected temperature and humidity range in each?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	3.4.1.3 Fitted storage facilities other than magazines (e.g. deck ready use lockers)? a. Position on ship? b. Are conditions within the storage enclosure controlled by ventilation or other means? c. Expected temperature and humidity range within the enclosure? d. Which geographic areas? e. Duration in each?			
3.4.2	When in a magazine or other storage position, will the store be stowed: 3.4.2.1 Horizontal, vertical or other? 3.4.2.2 Fore-and-aft or athwartships? 3.4.2.3 In purpose designed racking (give details)? 3.4.2.4 Above or below the waterline?			
3.5	**DEPLOYMENT ON LAUNCHER, GUN OR OTHER WEAPON SYSTEM**			
3.5.1	Where a launcher, gun or other weapon system is used (see Annex A Note 9): 3.5.1.1 Identify the weapon system. 3.5.1.2 How long will the store remain on this weapon system: a. At any one time? b. As a cumulative total during its life in service?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	3.5.1.3 In which geographic areas?			
	3.5.1.4 Is the store exposed to (if not fully exposed, describe amount and nature of protection): a. Solar radiation? b. Wind? c. Precipitation (including ice)? d. Salt spray? e. Water immersion?			
3.5.2	Is it required to assess whether the store will perform safely when fired through:			
	3.5.2.1 Rain?			
	3.5.2.2 Hail/sleet/snow?			
3.5.3	What is done with unused stores downloaded from the weapon system?			
3.5.4	If unused stores are recycled, what is the maximum number of times a store is likely to be placed on standby in the weapon system?			
3.6	**OTHER COMBAT VESSEL STORAGE OR OPERATIONAL CONDITIONS**			
3.6.1	Will the store be stowed or operated:			
	3.6.1.1 On or adjacent to a flight deck or helicopter landing pad?			
	3.6.1.2 Near a designated vehicle park?			
3.6.2	Will the store be subject to shock or gun blast while in any position on the ship? If so, give details.			

No.	Question	Package State (Note 4)	Answer	Source Reference
3.6.3	Could the store experience accidental drop during handling? If so, list for each case:			
	3.6.3.1 The maximum possible drop height.			
	3.6.3.2 Package state.			
	3.6.3.3 Action to be taken with dropped stores.			
3.6.4	If the store is to be launched from submarines, at what depth?			
3.6.5	If the store is a sea mine:			
	3.6.5.1 Will it be tethered or free floating?			
	3.6.5.2 What is the maximum operating depth?			
	3.6.5.3 How will it be laid?			
	3.6.5.4 What is the requirement for laid operational life?			
	3.6.5.5 In what geographic areas is it required to be operational?			
	3.6.5.6 Is the store self sterilising?			
	3.6.5.7 What are the "render-safe" requirements?			
	3.6.5.8 Is it intended to recover/clear the mine after rendering safe?			
3.6.6	Will the store be used as a helicopter weapon? If so, complete the section on Air Service Environment (Section 5).			

SECTION 4: LIFE CYCLE - "OPERATIONAL" PHASE - LAND SERVICE ENVIRONMENT

No.	Question	Package State (Note 4)	Answer	Source Reference
4.1	**TRANSPORT, DEPOT TO UNIT**			
4.1.1	Will the store be transported over sealed roads? If so (see Annex A Note 6):			
	4.1.1.1 What is the maximum likely distance?			
	4.1.1.2 In what type of vehicle?			
	4.1.1.3 Through what geographic areas?			
	4.1.1.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			
4.1.2	Will the store be transported over unsealed roads? If so:			
	4.1.2.1 What is the maximum likely distance?			
	4.1.2.2 In what type of vehicle?			
	4.1.2.3 Through what geographic areas?			
	4.1.2.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			

No.	Question	Package State (Note 4)	Answer	Source Reference
4.1.3	Will the store be transported by rail? If so:			
	4.1.3.1 What is the maximum likely distance?			
	4.1.3.2 Through what geographic areas?			
	4.1.3.3 What is the estimated total time on rolling stock: a. Running? b. Standing?			
4.1.4	Will the store be transported by sea? If so:			
	4.1.4.1 What is the maximum likely duration?			
	4.1.4.2 Will it be as: a. Stowed cargo? b. Deck cargo? c. If deck cargo, the type of protection provided, additional to that described in Section 1 above, if any (e.g. ISO Container)?			
	4.1.4.3 Through what geographic areas?			

No.	Question	Package State (Note 4)	Answer	Source Reference
4.1.5	Will the store be transported by aircraft? If so:			
	4.1.5.1 What type?			
	4.1.5.2 At what maximum altitude for: a. Unpressurised aircraft? b. Pressurised aircraft?			
	4.1.5.3 What is the maximum duration?			
4.1.6	Will the store be delivered by helicopter? If so:			
	4.1.6.1 As an internal load or underslung?			
	4.1.6.2 Will it experience the shock and vibration effects of gunfire?			
	4.1.6.3 What will be the maximum flight duration?			
4.1.7	Will the store be air dropped? If so, detail method of delivery and any protection provided, additional to that described in Section 1 above.			
4.1.8	Will the store be transported by amphibious vehicle, including hovercraft? If so:			
	4.1.8.1 In what type of vehicle (complete the remainder of this question for each vehicle type)?			
	4.1.8.2 What is the maximum likely distance?			
	4.1.8.3 Through what geographic areas?			
	4.1.8.4 What type of terrain?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	4.1.8.5 What is the estimated total time on vehicle: a. Running? b. Standing?			
4.1.9	Will the store be transported from depot to unit by any other means? If so, give details.			
4.1.10	Is the store likely to be returned to depot and subsequently re-issued? If so, how many times is this likely to occur?			
4.2	**STORAGE, UNIT**			
4.2.1	Under which of the following unit storage conditions is the store likely to be held during peacetime exercises and operational conditions? 4.2.1.1 Air-conditioned (with temperature and humidity control)? Storehouse temperature and humidity? Duration? 4.2.1.2 Temperature controlled only? Which geographic areas (e.g. city, state, etc)? Duration in each? 4.2.1.3 Good quality storehouse (see Annex A Note 7: Which geographic areas (e.g. city, state, etc)? Duration in each?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	4.2.1.4 Thin walled storehouse (see Annex A Note 8): Does it have adequate ventilation? Which geographic areas (e.g. city, state, etc)? Duration in each? 4.2.1.5 Unventilated temporary storage, e.g. canvas or containers affording direct cover from sun and rain (including storage on vehicles)? Which geographic areas (e.g. city, state, etc)? Duration in each? 4.2.1.6 No climatic protection (including storage on vehicles)? Which geographic areas (e.g. city, state, etc)? Duration in each?			
4.3	**FIELD DEPLOYMENT**			
4.3.1	In which geographic areas is the store likely to be deployed in the field during: a. Peacetime exercises? b. Operational conditions?			
4.3.2	When the store is carried in surface vehicles: 4.3.2.1 In what types of vehicle (complete the remainder of this question for each vehicle type)? 4.3.2.2 How is it stowed: a. Horizontal, vertical or other? b. Along front, rear or sides? c. In purpose designed or ad-hoc racking (give details)?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	4.3.2.3 What is the maximum distance for which the store will be carried?			
	4.3.2.4 Over what type of surface?			
	4.3.2.5 What is the estimated total time on the vehicle:			
	a. Running:			
	i) At any one time?			
	ii) As a cumulative total during its life in service?			
	b. Standing:			
	i) At any one time?			
	ii) As a cumulative total during its life in service?			
4.3.3	When the store is carried by a soldier on foot:			
	4.3.3.1 Describe means of handling, including any special packaging additional to that described in Section 1 above.			
	4.3.3.2 What is the maximum distance for which the store will be carried:			
	a. At any one time? b. As a cumulative total during its life in service?			

No.	Question	Package State (Note 4)	Answer	Source Reference
4.3 4	Where a launcher, gun or other weapon system is used (see Annex A Note 9):			
	4.3.4.1 Describe the weapon system. (Complete the remainder of this question for each system used.)			
	4.3.4.2 How long will the store remain in this weapon system: a. At any one time? b. As a cumulative total during its life in service?			
	4.3.4.3 Is the store transported in this weapon system? If so: a. What is the maximum distance for which the store will be transported? b. Over what type of terrain?			
	4.3.4.4 Is the store exposed to (if not fully exposed, describe amount and nature of protection): a. Solar radiation? b. Wind? c. Precipitation (including ice)? d. Dust or sand?			
4.3.5	Under which of the following conditions is the store likely to be held in the field during peacetime exercises and operational conditions, exclusive of periods spent in operations described under 4.3.2 to 4.3.4 above?			
	4.3.5.1 Unventilated temporary storage, e.g. canvas or containers affording direct cover from sun and rain (including storage on vehicles)? Duration?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	4.3.5.2 No climatic protection (including storage on vehicles)?			
	Duration?			
4.3.6	Is it required to assess whether the store will perform safely when fired through:			
	4.3.6.1 Rain?			
	4.3.6.2 Hail/sleet/snow?			
	4.3.6.3 Foliage?			
4.3.7	What is done with unused stores returned from field deployment?			
4.3.8	If unused stores are recycled, what is the maximum number of times a store is likely to be deployed in the field?			
4.3.9	Could the store experience accidental drop during handling? If so, list for each case:			
	4.3.9.1 The maximum possible drop height and scenario.			
	4.3.9.2 Package stage.			
	4.3.9.3 Action to be taken with dropped stores.			
4.3.10	Where the store is a land mine:			
	4.3.10.1 What is the method of laying?			
	4.3.10.2 What is the requirement for laid operational life?			
	4.3.10.3 In what geographic areas is it required to be operational?			
	4.3.10.4 Under what soil conditions is it required to be laid, and for what duration?			
	4.3.10.5 What are the "render-safe" requirements?			

No.	Question	Package State (Note 4)	Answer	Source Reference
4.3.11	Will the store be used as a helicopter weapon? If so, complete the section on Air Service Environment (Section 5).			

SECTION 5: LIFE CYCLE - "OPERATIONAL" PHASE - AIR SERVICE ENVIRONMENT

No	Question	Package State (Note 4)	Answer	Source Reference
5.1	**TRANSPORT, DEPOT TO UNIT**			
5.1.1	Will the store be transported over sealed roads? If so (see Annex A Note 6)			
	5.1.1.1 What is the maximum likely distance?			
	5.1.1.2 In what type of vehicle?			
	5.1.1.3 Through what geographic areas?			
	5.1.1.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			
5.1.2	Will the store be transported over unsealed roads? If so:			
	5.1.2.1 What is the maximum likely distance?			
	5.1.2.2 In what type of vehicle?			
	5.1.2.3 Through what geographic areas?			
	5.1.2.4 What is the estimated total time on vehicle:			
	a. Running? b. Standing?			

No.	Question	Package State (Note 4)	Answer	Source Reference
5.1.3	Will the store be transported by rail? If so:			
	5.1.3.1 What is the maximum likely distance?			
	5.1.3.2 Through what geographic areas?			
	5.1.3.3 What is the estimated total time on rolling stock: a. Running b. Standing			
5.1.4	Will the store be transported by sea? If so:			
	5.1.4.1 What is the maximum likely duration?			
	5.1.4.2 Will it be as: a. Stowed cargo? b. Deck cargo? c. If deck cargo the type of protection provided, additional to that described in Section 1 above, if any (e.g. ISO Container)?			
	5.1.4.3 Through what geographic areas?			
5.1.5	Will the store be transported by aircraft? If so:			
	5.1.5.1 What type?			
	5.1.5.2 At what maximum altitude for: a. Unpressurised aircraft? b. Pressurised aircraft?			
	5.1.5.3 What is the maximum duration?			

No.	Question	Package State (Note 4)	Answer	Source Reference
5.1.6	Will the store be transported from depot to unit by any other means? If so, give details?			
5.1.7	Is the store likely to be returned to depot and subsequently re-issued? If so, how many times is this likely to occur?			
5.2	**STORAGE, UNIT**			
5.2.1	Under which of the following unit storage conditions is the store likely to be held during peacetime exercises and operational conditions? 5.2.1.1 Air-conditioned (with temperature and humidity control)? Storehouse temperature and humidity? Duration? 5.2.1.2 Temperature controlled only? Which geographic areas (e.g. city, state, etc)? Storehouse temperature? Duration in each? 5.2.1.3 Good quality storehouse (see Annex A Note 7): Which geographic areas (e.g. city, state, etc)? Duration in each? 5.2.1.4 Thin walled storehouse (see Annex A Note 8): Does it have adequate ventilation? Which geographic areas (e.g. city, state, etc)? Duration in each?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	5.2.1.5 Unventilated temporary storage, e.g. canvas or containers affording direct cover from sun and rain (including storage on vehicles)? Which geographic areas (e.g. city, state, etc)? Duration in each? 5.2.1.6 No climatic protection (including storage on vehicles)? Which geographic areas (e.g. city, state, etc)? Duration in each?			
5.3	**DEPLOYMENT ON COMBAT AIRCRAFT**			
5.3.1	Will the store be transported to the aircraft on weapon trolleys? If so: 5.3.1.1 Over what type of surface? 5.3.1.2 Are trolleys unsprung? 5.3.1.3 Type of protection, if any, provided for the store? 5.3.1.4 Maximum duration of any waiting time on trolleys exposed to the weather?			
5.3.2	How and where is the store carried on the aircraft?			
5.3.3	Is the store an "Aircraft Installed" device? If so, what is the required installed life?			
5.3.4	Is the resultant mechanical environment known or specified as a requirement? If so, give details: 5.3.4.1 Vibration (including gunfire)? 5.3.4.2 Shock (airborne and landing, aircraft carrier operations)?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	5.3.4.3 Acceleration (on the aircraft and on launch)?			
	5.3.4.4 Emergency arrested landing?			
5.3.5	In which geographic areas is the store required to remain fitted to the aircraft on the ground/flight deck? For each area:			
	5.3.5.1 What is the maximum time that the store is required to remain fitted: a. At any one time? b. As a cumulative total during its service life?			
5.3.6	While fitted to the aircraft on the ground/flight deck, is the store exposed to (if not fully exposed, describe, amount and nature of protection):			
	5.3.6.1 Solar radiation?			
	5.3.6.2 Wind?			
	5.3.6.3 Precipitation (including ice)?			
	5.3.6.4 Salt spray?			
	5.3.6.5 Dust or sand?			
5.3.7	Could the store experience accidental drop during handling on the ground? If so, list for each case:			
	5.3.7.1 The maximum possible drop height.			
	5.3.7.2 Package state.			
	5.3.7.3 Action to be taken with dropped stores.			

No.	Question	Package State (Note 4)	Answer	Source Reference
5.3.8	What are the operational and training flight profiles for the aircraft in which the store will be carried, in terms of:			
	5.3.8.1 Duration?			
	5.3.8.2 Altitude?			
5.3.9	What is the total required flying time in hours of the store when carried by its parent aircraft?			
5.3.10	What are the temperature extremes to which the store is likely to be exposed during operational and training flights (including the effects of aerodynamic heating, and ambient temperatures at high altitudes)?			
5.3.11	Is any form of environmental protection provided for the store while fitted to the aircraft in flight? If so, give details.			
5.3.12	Is it intended that the store be fitted when the aircraft is deployed away from its base (e.g. involving long ferry flights)? If so:			
	5.3.12.1 What is the likely cumulative flight duration?			
	5.3.12.2 What is the maximum flight altitude?			
5.3.13	Is it required to assess whether the store will perform safely when fired through:			
	5.3.13.1 Rain?			
	5.3.13.2 Hail/sleet/snow?			
5.3.14	What is done with unused stores downloaded from the aircraft?			
5.3.15	If unused stores are recycled, what is the maximum number of times a store is likely to be placed on standby in the aircraft?			

No.	Question	Package State (Note 4)	Answer	Source Reference
5.3.16	Is it required to assess the response of the store to events such as:			
	5.3.16.1 A controlled emergency landing?			
	5.3.16.2 Crashes under attempted control?			
	5.3.16.3 Crashes out of control?			
5.3.17	Is it required to determine whether jettisoned stores remain safe?			

SECTION 6: ABNORMAL HAZARDS/EVENTS - APPLICABLE TO ALL STORES

No.	Question	Package State (Note 4)	Answer	Source Reference
6.1	**FIRE**			
6.1.1	Is the store stored/deployed in positions where it could be exposed to:			
	6.1.1.1 Liquid fuel fire?			
	6.1.1.2 Other type of fire impinging directly on the store or its packaging?			
	6.1.1.3 Fire in an adjacent compartment?			
	If so, give details of location, principle materials which would be involved in a fire, and store configuration.			
6.1.2	In the event of the store being involved in a fire, it is required to know:			
	6.1.2.1 The likely response of the store?			
	6.1.2.2 How much time is likely to be available for fire fighting or other emergency measures?			
6.1.3	Are there any known hazards associated with involvement of the store in a fire (e.g. toxicity of vapours, smoke)? If so, give details.			
6.1.4	Are there any other special fire fighting considerations? If so, give details.			

No.	Question	Package State (Note 4)	Answer	Source Reference
6.2	**IMPACT/SHOCK**			
6.2.1	Is it required to know the effects on a store in either the packaged or unpackaged state, of: 6.2.1.1 Bullet impact? 6.2.1.2 Fragment impact? 6.2.1.3 Blast? 6.2.1.4 Shock? 6.2.1.5 Shaped charge jet? 6.2.1.6 Sympathetic detonation? If so, describe the anticipated hazard and relevant storage/deployment configurations.			
6.3	**PREMATURE FUNCTIONING**			
6.3.1	Is it required to know the effects of a premature functioning of a store, in either the packaged or unpackaged state, upon other explosives stores in the vicinity? If so, give details of each applicable configuration and means of initiation.			
6.4	**NUCLEAR ENVIRONMENT**			
6.4.1	Is it required to know the effects on the store in the packaged or unpackaged state of: 6.4.1.1 Gamma Rays?			

No.	Question	Package State (Note 4)	Answer	Source Reference
	6.4.1.2 X-Rays? 6.4.1.3 Electromagnetic Pulse (EMP)?			
6.5	**ELECTROMAGNETIC ENVIRONMENT**			
6.5.1	Is it required to assess the response of the store in the packaged or unpackaged state to the effects of: 6.5.1.1 Electrostatic Charge? 6.5.1.2 Lightning? 6.5.1.3 The Service electromagnetic environment? 6.5.1.4 The induction of transient energy?			

NOTES AND DEFINITIONS FOR GUIDANCE IN COMPLETING THE QUESTIONNAIRE

Note No.

1. Primary packaging is the smallest package unit, exclusive of integral casings, used to contain the store or stores.

2. Secondary packaging is any packaging unit holding more than one primary package, and in which the primary packaged store spends a significant proportion of its life.

3. The life of an item of explosive ordnance is regarded as being made up of "storage" and "operational" phases, which in total comprise the Service Life of the store.

   Storage Life is defined as:

   > "The time for which an explosive item, in specified storage conditions, may be expected to remain safe and serviceable".

   Service Life is defined as:

   > "The time for which an explosive item, in specified storage conditions and when subsequently used under its operational and/or training conditions may be expected to remain safe and serviceable. This will normally be less than Storage Life".

   Operational Life is defined as:

   > "The time for which an explosive item may be expected to remain safe and serviceable when used under its operational or training conditions, when these are different from its storage condition, but which is within the envelope of its Storage Life".

   For the purpose of establishing an environmental profile the "storage" phase of an item's life is taken to commence at the date of filling, and may include storage by manufacturer prior to delivery, transport to major depot and all storage at major depots.

   The "operational" phase is taken to commence when an item leaves a major depot, and includes all subsequent deployment, interim storage (e.g. storage at operational bases or in the field) and end use.

4. For each question of Sections 2 to 5, state whether the store is unpackaged, in primary or secondary packaging, as described in Section 1, or in other type of package. If other, describe the packaging, e.g. ULC, slung in net, etc.

5. The life of an item of explosive ordnance commences from the date of filling. Therefore, any time for which items are held by the manufacturer prior to sale/delivery must be included in the total storage life of those items.

6. Throughout the questionnaire, in response to questions on geographic area, answer in terms of the actual region(s), not of climatic categories.

7. A "good quality" storehouse is one in which the inside temperature would be expected to remain reasonably constant over a 24 hour period, but would follow seasonal changes. It would normally be constructed of solid brick or similar material, and would have adequate natural ventilation.

8. A "thin-walled" storehouse is one in which the inside temperature would be expected to follow, but not exceed, daily fluctuations. It would normally be of light construction, with adequate ventilation, and must give complete protection from sun and rain.

   If ventilation in a thin walled storehouse is inadequate, the inside temperature will exceed ambient when there is significant solar radiation. In this situation classification as "unventilated" storage may be appropriate. However, it must be borne in mind that storage in such conditions may significantly shorten the life of the store.

   It may be necessary to obtain records of inside temperatures of typical buildings in the applicable climate before the appropriate storage conditions can be selected.

9. A "launcher, gun or other weapon system" includes any deployment device on or in which the store is held prior to delivery. Devices such as depth charge racks, grenade launchers should be included.

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A revised environmental questionnaire for explosive ordnance

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ANNOUNCEMENT

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ABSTRACT

A revised version of the environmental questionnaire used by the Australian Ordnance Council as an aid to determining the environment likely to be experienced by explosive ordnance stores has been prepared. The reasons for the revision are discussed, and the principles followed in the revised version are outlined. The revised questionnaire is included as an appendix.